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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/726,895

Applicant(s)

KOBAYASHI, OSAMU

Examiner

KENAN CEHIC

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-08)
Paper No(s)/Mail Date 01/23/2009, 10/29/2008, 09/12/2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For claim 1, 7, 13, the original disclosure does not disclose that “there is...no separate clock signal between the multimedia source device and the display device” nor “replacing the data packet header with a corresponding reduced size data packet header”. The specification merely discloses that no separate clock lines are present, not that there are **no separate clock signals**. The specification does not disclose that a packet header is being **replaced** with a reduced size packet header ie no disclosure of an existing header being replaced is present.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-18 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 10, 12-15 of U.S. Patent No. 7068686 in view of Universal Serial Bus Specification, hereinafter D1, and MPEG-2 Transmission, hereinafter D2.

Instant Application	US 7,068,686
Claims 1,7,13	See claim 9 "display...transferring information...bi-directional...packet attributes...multimedia data packets...uni-directional main link reduced multimedia data packet header...";
Claim 2, 8, 14	Claim 9 "virtual links...multi media packet streams..." Claim 10 "packets form"
Claim 3, 9, 15	Claim 10 "adjustable data stream link rate...independent of native"; claim 12
Claim 4, 10, 16	Claim 14 "bi-directional...uni-directional"
Claim 5, 11, 17	Claim 9 "number of virtual links...multi media packet streams...virtual link rate"
Claim 6, 12, 18	Claim 15 "aggregate of the virtual link bandwidths"

U.S. Patent No. 7068686 is silent about:

For claims 1, 7, and 13 includes information used by the device to at least identify the data packets of a particular stream, to recover original data from the data packet stream and to format the data packet stream back to a data packet stream native data rate; sending information associated with the streaming between the device and the another by way of the auxiliary channel concurrent with the streaming wherein there is no clock line and no separate clock signal between multimedia source device and the sink device

For claim 4, 10, 16, included as part of the main link.

D1 from the same field of endeavor discloses the following:

For claim 1, 7, and 13, D1 discloses sending information associated with the streaming between a device and another device by way of the auxiliary channel (see page 19 "One message pipe, the Default Control pipe, always exists once a device is powered one..." page 32 figure 5-9 "pipe bundle...default pipe...default control pipe..." page 34, 5.3.11 "USB devices required to implement a default control....uses this default control method...Default control pipe..."; 5.3.2 "Default control pipe..."; page 38-39, 5.5.2 "Each USB device is required to implement the Default Control pipe...additional control pipes...control transfers are supported via bi-directional flow over message pipes"); concurrent with the streaming (see page 278 "10.1.3...continuous...control transfers..."; see page 269-272 "endpoint...Standard Endpoint Descriptor...A feedback endpoint (explicit....needs to be associated with one or more isochronous data endpoints..."; page 33, Figure 5-10, Pipes and Endpoints; page 34 "5.3.2 Pipes...pipe is an association

between and endpoint...”; page 72-74 “Asynchronous...data rate feedback...” Table 5-12 “Asynchronous...explicit feedback...adaptive...explicit feedback...5.12.4.1.3...5.12.4.2...Feedback endpoints...bmAttributes...”; page 228-229 8.5.4 and figure 8-38 “Interrupt transaction...return data, NAK or STALL...ACK handshake”; page 206-209 8.4.5 “Handshake packets...response”; see page 43-44 5.5.5 “control transfers...information returned in a handshake...halt condition” AND/OR page 242-244 9.1.1.3 “After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device’s function may be used...device must be configure...SetConfiguration()...endpoint... 9.2.3 “A USB device must be configured before its functions may be used”; wherein there is not clock line and no separate clock signal in USB (see page 7 “Non Return to Zero Invert...Eliminates the need for clock pulses”; see page 132 Figure 7-12, Vbus, D+, D-, GND, page 86 6.3 “two power conductors and two signal conductors; no clock line is used; see page 157 “NRZI...bit stuffing...sync)

For claim 4, 10, 16, D1 discloses included as part of the main link (see page 72-73 Table 5-12 “Asynchronous...Source ...provides implicit feedforward (data stream)...Asynchronous...5.12.4.1.1...”; page 32 figure 5-9 Host, Pipe bundle “Each endpoint...simplex connection that supports data flow in one direction...”; page 60 “5.11.1.1...set of pipes...it needs to manipulate”; see page 20 “4.7 “set of uni-directional pipes”)

D2 from the same field of endeavor discloses the following:

For claim 1, 7, and 13 D2 discloses information used by the another device to at least identify the data packets of a particular stream (see pages 1-2 “Elementary Stream...packets...protocol header...one byte stream ID...”), to recover original data from the data packet stream (see pages 1-2 “Elementary Stream...packets...protocol header...PES_scrambling_Control...defines...the chosen scrambling method...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”) and to format the data packet stream back to a data packet stream native data rate (see pages 1-2 “Elementary Stream...packets...protocol header...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”); streaming multi-media packets (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of U.S. Patent No. 7068686 by using the above recited features, as taught by D1, and D2 , in order to provide transfer of data that has a guaranteed maximum service period, retry of transfer attempts at the next period, and guarantee access to bandwidth with bounded latency, guaranteed constant data rate, thus being able to accommodate a wide range of transmission requirements for data (see D1 page 44 5.6; page 58 5.7); in order to provide a data structure for video/audio transmission which enables scrambling, copyright information and information to correctly / securely process and output audio/video to the user properly and without adverse effects of transmission (see D2 pages 1-2)

3. Claims 1-18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 7177329 in view of Universal Serial Bus Specification, hereinafter D1, and MPEG-2 Transmission, hereinafter D2.

Instant Application	US 7,177,329
Claims 1,7,13	See claim 1 "display... bi-directional...packet attributes...uni-directional main link... multimedia data packets...separate clock signal lines... headers...reduced in size... prior";
Claim 2, 8, 14	Claim 3 "from...packet stream"
Claim 3, 9, 15	Claim 4 "adjustable data stream link rate...independent of native";
Claim 4, 10, 16	Claim 5 "bi-directional...uni-directional"
Claim 5, 11, 17	Claim 6 "number of virtual links...multi media packet streams...virtual link rate"
Claim 6, 12, 18	Claim 7 "aggregate of the virtual link bandwidths"

U.S. Patent No. 7177329 is silent about:

For claims 1, 7, and 13 includes information used by the device to at least identify the data packets of a particular stream, to recover original data from the data packet stream and to format the data packet stream back to a data packet stream native data rate; sending information associated with the streaming between the device and the another by way of the auxiliary channel concurrent with the streaming.

For claim 4, 10, 16, included as part of the main link.

D1 from the same field of endeavor discloses the following:

For claim 1, 7, and 13, D1 discloses sending information associated with the streaming between a device and another device by way of the auxiliary channel (see page 19 "One message pipe, the Default Control pipe, always exists once a device is powered one..." page 32 figure 5-9 "pipe bundle...default pipe...default control pipe..." page 34, 5.3.11 "USB devices required to implement a default control....uses this default control method...Default control pipe..."; 5.3.2 "Default control pipe..."; page 38-39, 5.5.2 "Each USB device is required to implement the Default Control pipe...additional control pipes...control transfers are supported via bi-directional flow over message pipes"); concurrent with the streaming (see page 278 "10.1.3...continuous...control transfers..."; see page 269-272 "endpoint...Standard Endpoint Descriptor...A feedback endpoint (explicit....needs to be associated with one or more isochronous data endpoints..."; page 33, Figure 5-10, Pipes and Endpoints; page 34 "5.3.2 Pipes...pipe is an association between and endpoint..."; page 72-74 "Asynchronous...data rate feedback..." Table 5-12 "Asynchronous...explicit feedback...adaptive...explicit feedback...5.12.4.1.3...5.12.4.2...Feedback endpoints...bmAttributes..."; page 228-229 8.5.4 and figure 8-38 "Interrupt transaction...return data, NAK or STALL...ACK handshake"; page 206-209 8.4.5 "Handshake packets...response"; see page 43-44 5.5.5 "control transfers...information returned in a handshake...halt condition" AND/OR page 242-244 9.1.1.3 "After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device's

function may be used...device must be configure...SetConfiguration()....endpoint...

9.2.3 “A USB device must be configured before its functions may be used”);

For claim 4, 10, 16, D1 discloses included as part of the main link (see page 72-73 Table 5-12 “Asynchronous...Source ...provides implicit feedforward (data stream)...Asynchronous...5.12.4.1.1...”; page 32 figure 5-9 Host, Pipe bundle “Each endpoint...simplex connection that supports data flow in one direction...”; page 60 “5.11.1.1...set of pipes...it needs to manipulate”; see page 20 “4.7 “set of uni-directional pipes”)

D2 from the same field of endeavor discloses the following:

For claim 1, 7, and 13 D2 discloses information used by the another device to at least identify the data packets of a particular stream (see pages 1-2 “Elementary Stream...packets...protocol header...one byte stream ID...”), to recover original data from the data packet stream (see pages 1-2 “Elementary Stream...packets...protocol header...PES_scrambling_Control...defines...the chosen scrambling method...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”) and to format the data packet stream back to a data packet stream native data rate (see pages 1-2 “Elementary Stream...packets...protocol header...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”); streaming multi-media packets (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of U.S. Patent No. 7177329 by using the above recited features, as taught by D1, and D2 , in order to provide transfer of data that has a guaranteed maximum service period, retry of transfer attempts at the next period, and guarantee access to bandwidth with bounded latency, guaranteed constant data rate, thus being able to accommodate a wide range of transmission requirements for data (see D1 page 44 5.6; page 58 5.7); in order to provide a data structure for video/audio transmission which enables scrambling, copyright information and information to correctly / securely process and output audio/video to the user properly and without adverse effects of transmission (see D2 pages 1-2)

4. Claims 1-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10726350 in view of Universal Serial Bus Specification, hereinafter D1, and MPEG-2 Transmission, hereinafter D2.

This is a provisional obviousness-type double patenting rejection.

Instant Application	US 7,068,686
Claims 1,7,13	See claims 1, 7,13 “bidirectional...unidirectional...prior to commencement...attributes...reduced size...transmitting...reduced size...over main link”;
Claim 2, 8, 14	Claim 2, 8, 14 “packets form”
Claim 3, 9, 15	Claim 3,9,15 “adjustable data stream link rate...independent of native”;
Claim 4, 10, 16	Claim 1, 7, 13 “unidirectional...bi-directional”

Claim 5, 11, 17	Claim 5, 11, 17 "number of virtual links...multi media packet streams...virtual link rate"
Claim 6, 12, 18	Claim 6, 12, 18 "aggregate of the virtual link bandwidths"

Application No. 10726350 is silent about:

For claims 1, 7, and 13 includes information used by the device to at least identify the data packets of a particular stream, to recover original data from the data packet stream and to format the data packet stream back to a data packet stream native data rate; sending information associated with the streaming between the device and the another by way of the auxiliary channel concurrent with the streaming wherein there is no clock line and no separate clock signal between multimedia source device and the sink device

D1 from the same field of endeavor discloses the following:

For claim 1, 7, and 13, D1 discloses sending information associated with the streaming between a device and another device by way of the auxiliary channel (see page 19 "One message pipe, the Default Control pipe, always exists once a device is powered one..." page 32 figure 5-9 "pipe bundle...default pipe...default control pipe..." page 34, 5.3.11 "USB devices required to implement a default control....uses this default control method...Default control pipe..."; 5.3.2 "Default control pipe..."; page 38-39, 5.5.2 "Each USB device is required to implement the Default Control pipe...additional control pipes...control transfers are supported via bi-directional flow over message pipes"); concurrent with the streaming (see page 278 "10.1.3...continuous...control transfers..."; see page 269-272 "endpoint...Standard Endpoint Descriptor...A feedback endpoint

(explicit....needs to be associated with one or more isochronous data endpoints..."; page 33, Figure 5-10, Pipes and Endpoints; page 34 "5.3.2 Pipes...pipe is an association between and endpoint..."; page 72-74 "Asynchronous...data rate feedback..." Table 5-12 "Asynchronous...explicit feedback...adaptive...explicit feedback...5.12.4.1.3...5.12.4.2...Feedback endpoints...bmAttributes..."; page 228-229 8.5.4 and figure 8-38 "Interrupt transaction...return data, NAK or STALL...ACK handshake"; page 206-209 8.4.5 "Handshake packets...response"; see page 43-44 5.5.5 "control transfers...information returned in a handshake...halt condition" AND/OR page 242-244 9.1.1.3 "After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device's function may be used...device must be configure...SetConfiguration()....endpoint... 9.2.3 "A USB device must be configured before its functions may be used"; wherein there is not clock line and no separate clock signal in USB (see page 7 "Non Return to Zero Invert...Eliminates the need for clock pulses"; see page 132 Figure 7-12, Vbus, D+, D-, GND, page 86 6.3 "two power conductors and two signal conductors; no clock line is used; see page 157 "NRZI...bit stuffing...sync)

For claim 4, 10, 16, D1 discloses included as part of the main link (see page 72-73 Table 5-12 "Asynchronous...Source ...provides implicit feedforward (data stream)...Asynchronous...5.12.4.1.1..."; page 32 figure 5-9 Host, Pipe bundle "Each endpoint...simplex connection that supports data flow in one direction..."; page 60 "5.11.1.1...set of pipes...it needs to manipulate"; see page 20 "4.7 "set of uni-directional pipes")

D2 from the same field of endeavor discloses the following:

For claim 1, 7, and 13 D2 discloses information used by the another device to at least identify the data packets of a particular stream (see pages 1-2 “Elementary Stream...packets...protocol header...one byte stream ID...”), to recover original data from the data packet stream (see pages 1-2 “Elementary Stream...packets...protocol header...PES_scrambling_Control...defines...the chosen scrambling method...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”); and to format the data packet stream back to a data packet stream native data rate (see pages 1-2 “Elementary Stream...packets...protocol header...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”); streaming multi-media packets (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Application No. 10726350 by using the above recited features, as taught by D1, and D2 , in order to provide transfer of data that has a guaranteed maximum service period, retry of transfer attempts at the next period, and guarantee access to bandwidth with bounded latency, guaranteed constant data rate, thus being able to accommodate a wide range of transmission requirements for data (see D1 page 44 5.6; page 58 5.7); in order to provide a data structure for video/audio transmission which enables scrambling, copyright information and information to

correctly / securely process and output audio/video to the user properly and without adverse effects of transmission (see D2 pages 1-2)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ooshima et al (US 2002/0071055) (as evidenced by “MPEG-2 Transmission”) in view of Universal Serial Bus Specification, hereinafter D1, MPEG-2 Transmission, hereinafter D2, and Greis et al. (US 2004/0081151)

For claims 1, 7, and 13 Ooshima discloses In a digital packet based (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”; see D1 pages 1-2 “Elementary Stream...packets...protocol header” and D2 page 36 “message...frame”) multimedia system (see fig 1; 5a) having a multimedia source device (see figs 1 and 3; 3) coupled to a multimedia display device (see figs 1-3; 2;) and arranged to transfer information between the display device and a source device and vice versa (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”) and to carry multimedia data from the multimedia source device to the multimedia display device (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”) ; compressing the signals / packets to be sent over the USB connection (see section 0033 “outputs compressed video and audio signals...compresses...then outputs the compressed signals to the display apparatus”) ;transmission of the data packets from source device to

display device (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”; see figs 1-3, ref. char 2 and 3); USB connection between the multimedia source device and the display device (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”; see figs 1-3) 4

and sending the multi-media data from the source device to the display device (see section 0032-34 “video and audio signals transferred from the display apparatus...compresses video signals...outputs compressed signals to the display apparatus 2 via the US controller...and the USB cable”; section 0029-30 “outputs the video signal to the personal computer...mpeg”, section 0036; 0056 “MPEG”; see figs 1-3, ref. char 2 and 3; see D1 pages 1-2 “Elementary Stream...packets...protocol header”); and

For claim 7, Ooshima discloses the apparatus (see fig. 1, 3; fig. 3, 3)

For claim 13, Ooshima discloses Computer readable medium encoded with a computer program and executable by a processor (see section 0028

“CPU..ROM...RAM...microcomputer...program...HDD”; section 0032

“CPU...program..”)

Ooshima is silent / not explicit about:

For claims 1, 7, and 13 a bi-directional auxiliary channel and a unidirectional main link arranged

multimedia data packets in the form of an multi-media data packet stream, wherein each of the multimedia data packets includes at least a multimedia data packet header; a method of reducing multimedia packet overhead, comprising:

prior to commencement of transmission of the data packets from the device to the another over the main link, communicating via the auxiliary channel multi-media data packet stream attributes to the display device, wherein the data packet stream attributes includes information used by the device to at least identify the data packets of a particular stream, to recover original data from the data packet stream and to format the data packet stream back to a data packet stream native data rate; replacing the data packet header with a corresponding reduced size data packet header for each of the multimedia data packets at the device commensurate with the data packet stream attributes already communicated via the auxiliary channel; and streaming the multi-media data packets having the reduced size data packet header from the device to another device; and sending information associated with the streaming between the device and the another by way of the auxiliary channel concurrent with the streaming wherein there is no clock line and no separate clock signal between USB devices

For claim 2, 8 and 14, wherein the data packet is one of a number of associated multimedia data packets that take together form a multimedia data packet stream.

For claim 3, 9 and 15 wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of a native stream rate.

For claims 4, 10 and 16, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry display related information from the display device to the source device and a uni-directional forward channel included as part of the main link for carrying source related information from the source device to the display device in concert with the back channel.

For claims 5 and 16, forming a number of virtual links each being associated with a particular one of the multi media data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate.

For claims 6, 12, and 18, wherein a main link bandwidth is at least equal to an aggregate of the virtual link bandwidths.

For claim 7, means for communicating via the auxiliary channel, means for replacing data packet headers, means for streaming, means for sending information

For claim 12, means forming a number of virtual links each being associated with a particular one of the multi media data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate.

D1 from the same field of endeavor disclose:

For claims 1, 7 and 13, D1 discloses bi-directional auxiliary channel (see page 32 figure 5-9 "...default pipe...default control pipe..." page 34, 5.3.11 "USB devices required to

implement a default control....uses this default control method...Default control pipe..."; page 36 5.3.2.2 Message pipes...message pipes support the control transfer type...Section 5.5"; 5.3.2 "Default control pipe..."; page 38-39, 5.5.2 "Each USB device is required to implement the Default Control pipe...control transfers are supported via bi-directional flow over message pipes"; page 278 "10.1.2 "out-of-band" AND / OR see page 72-73 Table 5-12 "Asynchronous...Source ...provides implicit feedforward (data stream)...Sink... provides explicit feedback (isochronous pipe)...Asynchronous...5.12.4.1.1..." and a unidirectional main link arranged (see page 44, 5.6.2 "isochronous pipe is a stream pipe....uni-directional..."; page 48 "5.7.2 "interrupt pipe is a stream pipe...always un—directional..."; see page 20 "4.7 "set of uni-directional pipes"), prior to commencement of transmission of the data packets from the device to another device over the main link (see page 44, 5.6.2 "isochronous pipe is a stream pipe....uni-directional..."; page 48 "5.7.2 "interrupt pipe is a stream pipe...always un—directional..."; page 32 figure 5-9) communicating attributes via the auxiliary channel to the device (see page 242-244 9.1.1.3 "After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device's function may be used...device must be configure...SetConfiguration()....endpoint... 9.2.3 "A USB device must be configured before its functions may be used"), communicating attributes via the auxiliary channel to the another device (see page 264-267 "configuration...Setconfiguration()..."; see page 269-270 "Endpoint...GetDescriptor(Configuration)....Standard Endpoint Descriptor...";)

sending information associated with the streaming between a device and another device by way of the auxiliary channel (see page 19 “One message pipe, the Default Control pipe, always exists once a device is powered one...” page 32 figure 5-9 “pipe bundle...default pipe...default control pipe...” page 34, 5.3.11 “USB devices required to implement a default control...uses this default control method...Default control pipe...”; 5.3.2 “Default control pipe...”; page 38-39, 5.5.2 “Each USB device is required to implement the Default Control pipe...additional control pipes...control transfers are supported via bi-directional flow over message pipes”); concurrent with the streaming (see page 278 “10.1.3...continuous...control transfers...”; see page 269-272 “endpoint...Standard Endpoint Descriptor...A feedback endpoint (explicit....needs to be associated with one or more isochronous data endpoints...”; page 33, Figure 5-10, Pipes and Endpoints; page 34 “5.3.2 Pipes...pipe is an association between and endpoint...”; page 72-74 “Asynchronous...data rate feedback...” Table 5-12 “Asynchronous...explicit feedback...adaptive...explicit feedback...5.12.4.1.3...5.12.4.2...Feedback endpoints...bmAttributes...”; page 228-229 8.5.4 and figure 8-38 “Interrupt transaction...return data, NAK or STALL...ACK handshake”; page 206-209 8.4.5 “Handshake packets...response”; see page 43-44 5.5.5 “control transfers...information returned in a handshake...halt condition” AND/OR page 242-244 9.1.1.3 “After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device’s function may be used...device must be configure...SetConfiguration()...endpoint... 9.2.3 “A USB device must be configured before its functions may be used”); wherein there is not clock line and no

separate clock signal in USB (see page 7 "Non Return to Zero Invert...Eliminates the need for clock pulses"; see page 132 Figure 7-12, Vbus, D+, D-, GND, page 86 6.3 "two power conductors and two signal conductors; no clock line is used; see page 157 "NRZI...bit stuffing...sync)

For claims 3, 9 and 15, D1 discloses adjustable rate that is independent of a native stream rate (see page 66 "different natural frequencies...8kHz microphone..."; page 67 "Sample clock...natural data rate...bus clock...fast sample rates"; see page 85 6.1 "operate at three speeds...480 Mb/s...12 Mb/s...1.5 Mb/s"; pages 73-74 "Adaptive...Feedback...")

For claims 4, 10 and 16, D1 discloses wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry output / received related information from the sink device to the source device (see page 72-73 Table 5-12 "Sink ...provides explicit feedback (isochronous pipe)...Asynchronous...sink must provide explicit feedback to the host..." and a uni-directional forward channel included as part of the main link for carrying source related information from the source device to the sink device in concert with the back channel (see page 72-73 Table 5-12 "Asynchronous...Source ...provides implicit feedforward (data stream)...Asynchronous...5.12.4.1.1..."; page 32 figure 5-9 Host, Pipe bundle "Each endpoint...simplex connection that supports data flow in one direction..."; page 60 "5.11.1.1...set of pipes...it needs to manipulate"; see page 20 "4.7 "set of uni-directional pipes").

For claims 5 and 16, D1 discloses forming a number of virtual links each being associated with a particular one of the data streams (see page 32 figure 5-9 "pipe bundle..."; see page 20 "4.7 "set of uni-directional pipes"; page 60 "5.11.1.1 "set of pipes") wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate (see page 269-270 "bandwidth requirement of each endpoint...isochronous...interrupt"; see pages 44-46 "5.65...constant data rate...isochronous pipe.....Isochronous....Bandwidth..."; page 49-51 "5.7.4 "Interrupt...Bandwidth...)

For claims 6, 12, and 18, D1 discloses wherein a main link bandwidth (see page 32 figure 5-9 "pipe bundle..."; see page 20 "4.7 "set of uni-directional pipes"; page 60 "5.11.1.1 "set of pipes") is at least equal to an aggregate of the virtual link bandwidths (see page 269-270 "bandwidth requirement of each endpoint...isochronous...interrupt"; see pages 44-46 "5.65...constant data rate...isochronous pipe.....Isochronous....Bandwidth..."; page 49-51 "5.7.4 "Interrupt...Bandwidth...).

For claim 7, D1 discloses means (see page 32 figure 5-9, Host and / or Physical device) for communicating via the auxiliary channel (see page 32 figure 5-9 "...default pipe...default control pipe..." page 34, 5.3.11 "USB devices required to implement a default control....uses this default control method...Default control pipe..."; page 36 5.3.2.2 Message pipes...message pipes support the control transfer type...Section 5.5"; 5.3.2 "Default control pipe..."; page 38-39, 5.5.2 "Each USB device is required to implement the Default Control pipe...control transfers are supported via bi-directional flow over message pipes"; page 278 "10.1.2 "out-of-band" AND / OR see page 72-73

Table 5-12 “Asynchronous...Source ...provides implicit feedforward (data stream)...Sink... provides explicit feedback (isochronous pipe)...Asynchronous...5.12.4.1.1...”), means (see page 32 figure 5-9, Host and / or Physical device) for streaming (see page 44, 5.6.2 “isochronous pipe is a stream pipe...uni-directional...”; page 48 “5.7.2 “interrupt pipe is a stream pipe...always un—directional...”; see page 20 “4.7 “set of uni-directional pipes”), means (see page 32 figure 5-9, Host and / or Physical device) for sending information (see page 278 “10.1.3...continuous...control transfers...”; see page 269-272 “endpoint...Standard Endpoint Descriptor...A feedback endpoint (explicit...needs to be associated with one or more isochronous data endpoints...”; page 33, Figure 5-10, Pipes and Endpoints; page 34 “5.3.2 Pipes...pipe is an association between and endpoint...”; page 72-74 “Asynchronous...data rate feedback...” Table 5-12 “Asynchronous...explicit feedback...adaptive...explicit feedback...5.12.4.1.3...5.12.4.2...Feedback endpoints...bmAttributes...”; page 228-229 8.5.4 and figure 8-38 “Interrupt transaction...return data, NAK or STALL...ACK handshake”; page 206-209 8.4.5 “Handshake packets...response”; see page 43-44 5.5.5 “control transfers...information returned in a handshake...halt condition” AND/OR page 242-244 9.1.1.3 “After the device has been powered...reset...respond...to device and configuration descriptor requests and return information...Before a USB device’s function may be used...device must be configure...SetConfiguration()...endpoint... 9.2.3 “A USB device must be configured before its functions may be used”

, communicating attributes via the auxiliary channel to the display device “ see page 264-267 “configuration...Setconfiguration(...)”; see page 269-270

“Endpoint...GetDescriptor(Configuration)...Standard Endpoint Descriptor...”;

For claim 11, D1 discloses means (see page 32 figure 5-9, Host and / or Physical device) forming a number of virtual links each being associated with a particular one of the data streams (see page 32 figure 5-9 "pipe bundle..."; see page 20 “4.7 “set of uni-directional pipes”; page 60 “5.11.1.1 "set of pipes") wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate (see page 269-270 “bandwidth requirement of each endpoint...isochronous...interrupt”; see pages 44-46 “5.65...constant data rate...isochronous pipe.....Isochronous....Bandwidth...”; page 49-51 "5.7.4 "Interrupt...Bandwidth...)

D2 from the same field of endeavor discloses the following:

For claims 1, 7, and 13, D2 discloses multimedia data packets in the form of an multimedia data packet stream (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header”), wherein each of the multimedia data packets includes at least a multimedia data packet header (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header”); multi-media data packet stream attributes (see pages 1-2 “Elementary Stream...packets...protocol header”); information used by the another device to at least identify the data packets of a particular stream (see pages 1-2 “Elementary Stream...packets...protocol header...one byte stream ID...”), to recover original data from the data packet stream (see pages 1-2 “Elementary

Stream...packets...protocol header...PES_scrambling_Control...defines...the chosen scrambling method...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”) and to format the data packet stream back to a data packet stream native data rate (see pages 1-2 “Elementary Stream...packets...protocol header...presentation time stamp...Decode time stamp...used to synchronies a set of elementary streams and control the rate at which they are replayed...Elementary Stream rate...”); streaming multi-media packets (see pages 1-2 pages 1-2 “Elementary Stream...packets...protocol header”)

For claims 2, 8 and 14, D2 discloses wherein the data packet is one of a number of associated multimedia data packets that take together form a multimedia data packet stream (see pages 1-3 “Elementary Stream...packets...MPEG Program stream...PES packets...Transport stream each PES packet...”).

For claims 3, 9 and 15, D2 discloses wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated data stream link rate (see pages 1-2 “ES...digital audio...digital video...digital data...rate at which the ES was encoded”)

For claims 4, 10 and 16, D2 discloses display related information (see pages 1-2 “Elementary Stream...packets...protocol

header...PES_scrambling_Control...defines...the chosen scrambling method...presentation time stamp...Decode time stamp...used to synchronies a set of

elementary streams and control the rate at which they are replayed...Elementary Stream rate...")

For claim claims 5 and 16, D2 discloses particular multi media data packet streams (see pages 1-2 "ES...digital audio...digital video...digital data...rate at which the ES was encoded")

Greis from the same or similar field of endeavor discloses the following:

For claim 1, Greis discloses a method of reducing multimedia packet overhead (see section 0012 "header compression scheme..."; section 0027 "removing those header fields portions...has already transferred.."; section 0047 "remove or at least shorten or compress header field(s)"), comprising:

replacing the data packet header with a corresponding reduced size data packet header for each of the data packets at the source device (see sections 0012-13 "header compression...compressing a header portion transmitted via...connection..."; section 0027 "removing those header fields portions...has already transferred.."; section 0047 "remove or at least shorten or compress header field(s)") commensurate with the data packet stream attributes already communicated prior via the auxiliary channel (see section 0046-47 "control channel...out-of-band channel...control signaling for connection setup...checked at setup control unit..."; see fig. 3)

For claim 7, D2 discloses means (see fig. 3, 201, 202) for replacing data packet headers (see sections 0012-13 "header compression...compressing a header portion transmitted

via...connection..."; section 0027 "removing those header fields portions...has already transferred."; section 0047 "remove or at least shorten or compress header field(s)").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify / combine the features of Ooshima by using the above recited features, as taught by D1, D2 and Greis, in order to provide transfer of data that has a guaranteed maximum service period, retry of transfer attempts at the next period in a USB system, and guarantee access to the USB bandwidth with bounded latency, guaranteed constant data rate, thus being able to accommodate a wide range of transmission requirements for data (see D1 page 44 5.6; page 58 5.7); in order to provide a data structure for video/audio transmission which enables scrambling, copyright information and information to correctly / securely process and output audio/video to the user properly and without adverse effects of transmission (see D2 pages 1-2); in order to provide a compression method which reduces redundant information, thus saving valuable / scarce bandwidth (see section 0009-11; 0011-27; 0047)

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENAN CEHIC whose telephone number is (571)270-3120. The examiner can normally be reached on Monday through Friday 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KWANG BIN YAO can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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